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10/784,065	02/20/2004	Daniel J. Magenheimer	200315952-1	2613

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EXAMINER	
KAWSAR, ABDULLAH AL	
ART UNIT	**PAPER NUMBER**
2195	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/784,065	MAGENHEIMER, DANIEL J.	
	Examiner	Art Unit	
	Abdullah-Al Kawsar	2195	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 February 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-41* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-41* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *02/20/2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *02/20/2004, 12/30/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-41 are pending.

Claim Rejections - 35 USC § 101

2. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. Claims 35-41 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The claimed system is software per se, as they are not tangibly embodied on any sort of physical medium. The claims recite "means for determining", "means for virtualizing", but these limitations are described as being software in the specification.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1-41 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

a. The following claim language is not clearly understood:

i. Claim 1, line 2 it is unclear what is meant by "first manner as a native operating system" (i.e. operating system boots up as native OS by default? how is the booting mode defined?). Line 5 recites "code for determining" it is unclear

how it is determined from the code (i.e. using a code/instruction set to determine the OS mode? How? Or reading a code/flag to determine the OS mode?).

ii. Claims 11, 17, 27 and 35 has similar deficiency as claim 1.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1, 5-7, 11, 14, 17-18, 24, 26-27, 32, 34-35, 37-38 are rejected under 35 U.S.C. 102(b) as being unpatentable by Inoue et al(Inoue) US Patent No. 5437033.

8. As per claim 1, Inoue teaches the claimed invention substantially as claimed including a flexible operating system comprising:

operability for executing in a first manner as a native operating system(non-guest mode) on a computer system and for executing in a second manner as a virtualized operating system(guest mode) on said computer system(col 1, lines 46-50; col 2, lines 20-25); and

code for determining whether said operating system is being used as a native operating system or as a virtualized operating system on said computer system(col 2, lines 3-7; col 6, lines 6-8; col 7, lines 47-53).

9. As per claim 5, Inoue teaches that code for checking a global variable that indicates whether said operating system is being used as a native operating system or as a virtualized operating system on said computer system (col 6, lines 6-8; col 7, lines 47-53).

10. As per claim 6, Inoue teaches the code for executing an instruction which, when the operating system is being used as a virtualized operating system causes a Virtual Machine Monitor (VMM) to set at least one configuration bit to a first value and when the operating system is being used as a native operating system causes the VMM to set said at least one configuration bit to a different value (col 7, lines 47-50; lines 62-67).

11. As per claim 7, Inoue teaches that code for setting said global variable based at least in part on the value of said at least one configuration bit after executing said instruction (col 7, lines 62-67).

12. As per claim 14, Inoue teaches the first manner comprises acting as a native operating system (col 1, lines 46-50).

13. As per claim 17, Inoue teaches the code for determining whether said operating system is running virtualized (col 2, lines 3-7; col 6, lines 6-8; col 7, lines 47-53); and

code for adapting operation of said operating system depending on whether it is running virtualized(col 7, lines 47-50; col 8, lines 1-6).

14. As per claims 24 and 26, they have similar limitations of claims 6 and 7 above. Therefore, they are rejected under the same rational as claims 6 and 7 above.

15. As per claim 27, it is a system claim of claim 17 above. Therefore, it is rejected under the same rational as claim 17 above.

16. As per claim 32, Inoue teaches a Virtual Machine Monitor (VMM) (col 5, lines 11-16).

17. As per claim 34, Inoue teaches that virtualized environment comprises a Virtual Machine Monitor (VMM) (col 5, lines 11-16).

18. As per claim 37, Inoue teaches that means for virtualizing resources of said system and multiplexing said resources among one or more virtualized operating systems (col 5, lines 11-16).

19. As per claim 11 and 35, they are method and system claims of claim 1 above. Therefore, they are rejected under the same rational as claim 1 above.

20. As per claims 18 and 38, they have similar limitations of claim 5 above. Therefore, they are rejected under the same rational as claim 5 above.

Claim Rejections - 35 USC § 103

21. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

22. Claims 2, 12-13, 25, 28-29, 36, 39-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue et al(Inoue) US Patent No. 5437033, in view of Fish(Fish) US Patent No. 6199159.

23. As per claim 2, Inoue dose not specifically disclose Inoue does not specifically disclose code for selectively executing in said first manner if determined that said operating system is being used as a native operating system by said computer system and in said second manner if determined that said operating system is being used as a virtualized operating system on said computer system.

However, Fish discloses the code for selectively executing in said first manner if determined that said operating system is being used as a native operating system by said computer system and in said second manner if determined that said operating system is being used as a virtualized operating system on said computer system (col 3, lines 2-8).

It would have been obvious to a person of ordinary skill in art at the time of invention was made to incorporate the teaching of Fish into the method of Inoue for code for selectively executing as native and virtual mode. The modification would have been obvious because one of

the ordinary skills of the art would want to execute different mode of operating system for better utilization of system resources by being able to handle the system resources properly.

24. As per claims 12, 28 and 40, they have similar limitations of claim 2 above. Therefore, they are rejected under the same rational as claim 2 above.

25. As per claim 13, Inoue teaches said at least one operating system determines whether it is being used as said native operating system or as said guest based at least in part on a value of a global variable (col 6, lines 6-8; col 7, lines 47-53).

26. As per claim 25, Fish teaches code for determining whether said operating system is running virtualized based at least in part on a determined value of at least one configuration bit after execution of said instruction(col 3, lines 2-5).

27. As per claim 29, Inoue teaches said first manner comprises acting as a native operating system(col 1, lines 46-50).

28. As per claim 36, Fish teaches determining means makes the determination during a boot-up process of the system(col 2, lines 64-67 through col 3, lines 1-5).

29. As per claim 39, Fish teaches that if determined that it is being used as a virtualized operating system, said flexible operating system acting as a virtualized operating system(col 3, lines 28-34).

30. Claims 15, 16, 19, 21-22, 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue et al(Inoue) US Patent No. 5437033, in view of "Xen and the Art of Virtualization" by Paul Barham(Barham).

31. As per claim 15, Inoue does not specifically teach said second manner comprises acting as a paravirtualized operating system.

However, Barham teaches that said second manner comprises acting as a paravirtualized operating system(page 165, col 2, lines 9-12).

It would have been obvious to a person of ordinary skill in art at the time of invention was made to incorporate the teaching of Barham into the method of Inoue for having paravirtualized operating system in virtual machine mode. The modification would have been obvious because one of the ordinary skills of the art would want to utilize the privileged instruction set execution facility in paravirtualized operating system in virtualized mode.

32. As per claim 16, barham teaches said paravirtualized operating system makes, for at least one privileged operation, a call to a Virtual Machine Monitor (VMM) (page 167, col 1, lines 24-27).

33. As per claim 19, Inoue teaches the code for checking the value of a global variable checks said value of said global variable before performing certain privileged operations (col 7, lines 47-50; lines 62-67).

Inoue does not specifically disclose performing a privileged operation.

However Barham teaches performing a privileged operation (page 166, col 1, lines 22-24; page 167, col 1, lines 24-27).

34. As per claim 21, Barham teaches said code for adapting comprises: if determined that said operating system is running virtualized, adapting operation of said operating system in executing said certain privileged instructions (page 166, col 1, lines 22-24; page 167, col 1, lines 24-27).

35. As per claim 22, Barham teaches said adapting operation of said operating system in executing said certain privileged instructions comprises: making at least one call to a Virtual Machine Monitor (VMM) (page 166, col 1, lines 22-24; page 167, col 1, lines 24-27).

36. As per claim 33, Barham teaches the said at least one operating system adapts its operation to make a call to said VMM for performance of at least one privileged instruction when said at least one operating system determines that it is running in a virtualized environment (page 166, col 1, lines 22-24; page 167, col 1, lines 24-27).

37. Claims 3,4, 8-10, 20, 23, 30-31, 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue et al(Inoue) US Patent No. 5437033, in view of Fish(Fish) US Patent No. 6199159, and in view of "Xen and the Art of Virtualization" by Paul Barham(Barham).

38. As per claim 3, the combined method of Inoue and Fish dose not specifically disclose second manner comprises acting as a paravirtualized operating system.

However, Barham teaches that second manner comprises acting as a paravirtualized operating system (page 165, col 2, lines 9-12).

It would have been obvious to a person of ordinary skill in art at the time of invention was made to incorporate the teaching of Barham into the combined method of Inoue and Fish for paravirtualized operating system in virtual machine mode. The modification would have been obvious because one of the ordinary skills of the art would want to utilize the privileged instruction set execution facility in paravirtualized operating system in virtualized mode.

39. As per claim 4, Barham teaches that paravirtualized operating system is operable to make a call to a Virtual Machine Monitor (VMM) for performing at least one privileged operation(page 167, col 1, lines 24-27).

40. As per claim 8, Barham teaches the code for making a call to a Virtual Machine Monitor (VMM) for performing at least one privileged operation(page 166, col 1, lines 22-24; page 167, col 1, lines 24-27).

41. As per claim 9, Barham teaches the code for making a call to said VMM uses an Application Program Interface (API) defined for said VMM (page 167, col 1, lines 4-9).

42. As per claim 10, Barham teaches the code for making a call to said VMM is used for performing said at least one privileged operation if determined that said operating system is being used as virtualized operating system on said computer system(page 166, col 1, lines 22-24; page 167, col 1, lines 24-27).

43. As per claim 20, Barham teaches that code for determining, before execution of certain privileged instructions, whether said operating system is running virtualized (page 165, lines 54-59).

44. As per claim 23, it is a system claim of claim 8 above. Therefore, it is rejected under the same rational as claim 8 above.

45. As per claims 30, 31, they are method and system claims of claims 3 and 4 above. Therefore, they are rejected under the same rational as claims 3 and 4 above.

46. As per claim 37, Barham teaches means for virtualizing resources of said system and multiplexing said resources among one or more virtualized operating systems(page 176, col 1, lines 17-19).

47. As per claim 41, Inoue teaches said first manner comprises acting as a native operating system, and wherein said second manner comprises acting as a paravirtualized operating system(col 1, lines 46-50; col 2, lines 20-25).

Inoue does not specifically disclose acting as a paravirtualized operating system.

However Barham teaches acting as a paravirtualized operating system (page 165, col 2, lines 9-12).

Conclusion

48. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Berry et al. (US Patent No. 6738977); Klaiber et al. (US Patent No. 7209994)

49. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Abdullah-Al Kawsar whose telephone number is 571-270-3169. The examiner can normally be reached on 7:30am to 5:00pm, EST.

50. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng Ai T. An can be reached on 571-272-3756. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

51. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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